





Offence-specific scripts among juvenile deliberate firesetters: a possible explanation for fire proclivity

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The study employed inductive-thematic analysis to identify dynamic cognitive-emotional processes occurring in proximity to deliberate firesetting among a sample of $N = 35$ adjudicated juvenile firesetters. Six fire-specific themes were determined. Three of these themes are akin to an implicit theory (i.e. a belief system informed by previous experiences): Fire Interest, Fire is Controllable, and Fire Denial/Accidental. Three of these themes are consistent with a cognitive script (i.e. a behavioural guide for how and when to use fire): (a) fire is destructive; (b) fire conceals evidence; and (c) fire creates calm. When reviewed more closely, the theme ‘fire is destructive’ is composed of two separate subcategories: ‘fire creates destructive fun’ and ‘fire is a destructive tool for revenge’. The findings have risk assessment and treatment implications for juvenile firesetters.

Keywords: arson; firesetting; juvenile; scripts.

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The implications associated with deliberate firesetting are a financial burden for communities on a global scale, with annual economic impacts of \$2.3 billion in Australia (Smith et al., 2014), \$1.3 billion in the United States (Everts, 2012) and £1.49 billion in the United Kingdom (National Fire Chiefs Council, NFCC, 2019). These costs pertain to property loss, indirect and intangible loss, insurance claims and the cost of emergency services. In addition to the financial consequences, deliberate firesetting can result in loss of life, serious injury and devastation to the environment (Arson Prevention Forum, 2017). These consequences can have a significant detrimental impact on the emotional, psychological and physical well-being of victims, families and the wider community.

Juveniles are consistently found to be responsible for a disproportionate number of

deliberately lit fires. In Australia, juveniles at the age of criminal responsibility (aged 10–19 years) comprise only 12.83% of the Queensland (QLD) population and 11.87% of the New South Wales (NSW) population yet are responsible for almost half of all arson offences throughout each state (Australian Bureau of Statistics, 2020; New South Wales Bureau of Crime Statistics & Research, NSW BOSCAR, 2021; Qld Crime Report, 2019–2020). These figures are echoed internationally, with youth aged 10–19 years accounting for over half of property damage by fire or explosion in New Zealand (Statistics New Zealand, 2021). These official figures are also shown to under-represent the number of juveniles engaging in deliberate firesetting behaviours, with self-reported prevalence rates exceeding official figures (Watt et al., 2015). The discrepancy between official figures and

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self-report illustrates that deliberate firesetting frequently occurs covertly and without detection.

Overview of juvenile deliberate firesetters and firesetting theory

Juveniles who engage in deliberate firesetting are a complex and heterogeneous sub-group of youth offenders (MacKay et al., 2012; Perks et al., 2019). They often present with adverse upbringing and family relationships, early and repeat involvement with the criminal justice system, neurodevelopmental disorder, poor social skills and emotional regulation, and extensive history of engaging in multiple problem behaviours, and have few protective factors (Perks et al., 2019). Whilst there has been significant empirical attention on the developmental and distal domains that predispose vulnerability towards juvenile deliberate firesetting (see Perks et al., 2019) the dynamic risk factors that occur in proximity to an offence and trigger an underlying vulnerability are relatively less understood. Focusing on the proximal and dynamic risk factors associated with deliberate firesetting, instead of discrete characteristics without contextual understanding, has the potential to advance risk assessment and treatment planning for juveniles engaging in deliberate firesetting.

Currently, dynamic behaviour theory (Fineman, 1980) remains the most robust theoretical understanding of juvenile deliberate firesetting. Dynamic behavioural theory hypothesises that firesetting occurs by way of an interaction between general psychosocial disadvantage predisposing general delinquency; previous or existing environmental factors that reinforce firesetting; and instant environmental factors that trigger firesetting. The integration of instant environmental factors and reinforcers provides an explanation for both impetus and maintenance of firesetting behaviour. They are posited to moderate an individual's propensity to set a fire and assist in understanding potential triggers. The instant environmental factors identified by

Fineman (1980) that facilitate the onset and continuation of deliberate firesetting include: (a) impulsivity triggers (e.g. trauma, rejection or victimisation); (b) cognitive and affective factors pre, post and during the firesetting behaviour (e.g. cognitive and emotional dysregulation); (c) crime scene features (e.g. indicators of specific targets or motivation for firesetting behaviour); (d) internal and external fire-specific reinforcers (e.g. external reinforcers such as to conceal a crime, and internal reinforcers such as sensory stimulation or reduction in negative affect).

Whilst impulsivity (Walters, 2022), crime scene features and internal/external fire-specific reinforcers (Santtila et al., 2003) have received empirical attention, the exploration and integration of proximal cognitive and affective factors have received no empirical attention amongst a juvenile firesetting population. To date, classification models hoping to determine the risk and treatment needs of juvenile firesetters have either lacked empirical support (i.e. Fineman, 1995) or provided insufficient explanation for the variation in risk amongst juveniles presenting with the same fire-specific risk factors (Del Bove & Mackay, 2011). For instance, Del Bove and Mackay (2011) found that curiosity with fire is a characteristic pertinent to multiple types of deliberate firesetting behaviour, irrespective of severity or age. Del Bove and Mackay opined that heterogeneity of fire-specific appraisals, attitudes, attribution and beliefs among juveniles' deliberate firesetting may plausibly mediate deliberate firesetting behaviour among juveniles. This, however, remains unexamined amongst a juvenile population.

Over the last decade, researchers have continued to revise and advance earlier multi-factor theories of deliberate firesetting behaviour for adult populations (Butler & Gannon, 2021; Gannon et al., 2012). The multi-trajectory theory of adult firesetting (M-TTAF; Gannon et al., 2012) undoubtedly advances knowledge of this specific forensic population and addressed the dearth of information on

proximal dynamic risk factors and treatment targets amenable to change. However, it cannot be assumed that juvenile firesetters are synonymous with adults, given that neuropsychological capacity, personality and behaviour develop over the lifespan. Moreover, researchers who have considered the applicability of the M-TTAF for a juvenile population have concluded that the adult theory lacks developmental sensitivity (Lovell, 2013).

Current theories of juvenile firesetting lack the breadth, specificity, developmental sensitivity and empirical rigour to comprehensively and confidently understand the juvenile deliberate firesetting population. Future theoretical development would benefit from considering the integration of proximal dynamic risk factors precipitating and maintaining firesetting, a functional understanding of co-occurring firesetting and non-firesetting behaviour given the high co-occurrence of firesetting and broader antisocial behaviour, and consideration of existing developmental and life course theories of general juvenile offending that can explain the onset, diversification, escalation, persistence and desistance of offending behaviour among a juvenile firesetting cohort (i.e. integrated cognitive antisocial potential theory, Farrington, 2005; and the pathway model, Loeber & Ahonen, 2015).

Investigating proximal dynamic risk factors

Researchers maintain that the various interactions between risk domains can give rise to a series of different mechanisms underlying a problematic behaviour, thus evidencing that behaviour is heterogeneous, and individuals light fires for different reasons (Fritzon, 2012; Gannon et al., 2012). As explained by Fritzon (1998, 2012), though, it is the acutely dynamic factors occurring in proximity to the offence that trigger the onset of the behaviour. Variation in behavioural style and functional needs are suggested to arise from proximal changes in environmental (external cues) or implicit experiences (internal cues).

A proximal dynamic risk factor can be defined as a specific cognitive, emotional, situational or interpersonal experience, which is encoded from previous interactions between predisposing domains, and is triggered either internally or externally to evoke a behavioural response. Accordingly, researchers have recently focused on examining offence-specific psychological factors that may occur in proximity to an act of deliberate firesetting (Butler & Gannon, 2015), in addition to evaluating historical and clinical domains associated with general offending.

In the case of juvenile firesetters, a shift in behaviour may reflect development, rather than a new and enduring domain of risk. For instance, one functional need may be dominant and another dormant, with the latter manifesting with a shift in psychological and physiological development. Therefore, closer evaluation of proximal and dynamic risk factors is of particular importance in the context of developing adolescents who are undergoing psychosocial and physiological adaptations (Al-Attar, 2010). Monitoring changes in dynamic risk, function and behavioural style among the juvenile population is pertinent for preventing future offending.

In combination, the theoretical framework of Fineman (1995) and recent advances in the field of adult firesetting (Butler & Gannon, 2015, 2021; Gannon et al., 2012) can be used to develop hypotheses for the specific dynamic factors that directly precede and follow juvenile problematic behaviour. Identifying dynamic cognitive–emotional processes occurring in proximity to a problematic behavioural incident, regarded as fire-specific reinforcers, is proposed to help determine the underlying precipitating and maintaining factors for juvenile firesetting behaviour, and the likelihood of behavioural occurrence. This proposal is supported by empirical research in the field of aggression and violence. For instance, Low and Day (2017) identified that sub-types of (adult) violent offenders could be differentiated by their thinking styles and emotional

regulation profiles, therefore requiring different treatment approaches to reduce recidivism. Dual-processing models such as the *general aggression model* (GAM; Anderson & Bushman, 2002) describe aggression-specific cognitive processes as part of an aggression-related event sequence, whereby stored representations of behavioural responding guide future behaviour (Gilber & Daffern, 2017). Jouriles et al. (2012) demonstrated that automatic aggressive cognitive patterns (e.g. Strack & Deutsch, 2004; reflective-impulsive cognitive model) can predict dating violence among adolescence, as well as predict changes in violent occurrence over time.

Aggression scripts are explained by Gilbert and Daffern (2017) to emerge in early childhood and to be encoded in memory, rehearsed, refined and subsequently retrieved as a template for behavioural response. Identifying scripts and ascertaining the level of automaticity or enmeshment with a script are recommended, as script rehearsal even in the absence of a behavioural output is a method for reducing negative affect, providing reinforcement for the problematic cognitive sequence (Gilbert & Daffern, 2017). They acknowledge, however, that there is limited research available for offence-specific scripts. Thus, the reliability, generalisability and efficacy of targeting scripts to reduce recidivism is currently inconclusive. Exploring the offence-specific psychological process among juvenile deliberate firesetters, as well as the cognitions specifically associated with the act of deliberately lighting a fire, is proposed to inform more reliably risk assessment and offence-specific treatment targets to mitigate risk.

Implicit theories and cognitive scripts of firesetting behaviour

Implicit theories can be understood as an internal processing system composed of an individual's beliefs, intentions and desires about themselves and the world, which somewhat automatically influences behavioural

motivation (Ward, 2000). In the context of deliberate firesetting, the interaction between previous fire experiences and individual risk factors is said to shape the development of an individual's belief system about fire, whilst an individual's cognitive representation about the use of fire is what *motivates* engagement in deliberate firesetting behaviour (Ó'Ciardha & Gannon, 2012). Ó'Ciardha and Gannon (2012) proposed that adult firesetters hold one or more of five implicit theories about the use of fire; three are fire-specific (i.e. fire is a powerful tool, fire is fascinating/exciting, and fire is controllable), and two are generally anti-social (i.e. dangerous world and normalisation of violence).

Butler and Gannon (2015) later proposed that deliberate firesetters hold cognitive scripts, which are understood to be knowledge structures that guide *when* and *how to use fire*, opposed to a belief system about fire that may motivate engagement in deliberate firesetting. Butler and Gannon propose that fire-scripts develop during childhood following exposure to and experience of fire, forming a part of an offender's psychological vulnerability and distorted world view. Scripts are cognitions held by the firesetter and have utility for understanding an offender's deliberate firesetting behaviour and how to reduce the likelihood of re-occurrence. They are suggested by Butler and Gannon to inform an individual's firesetting trajectory.

Butler and Gannon (2015) proposed, and later empirically demonstrated (Butler & Gannon, 2021), that four fire-scripts exist among adult deliberate firesetters:

- *Fire is a powerful messenger*: Stored knowledge on how and when to use fire to communicate distress or solve a problem through the acquisition of connection. The script may be fused with aggression (i.e. aggression-fire fusion scripts) and held by individuals who value the use of indirect or emotionally detached aggression. In

accordance with the multi-trajectory theory of adult firesetting (M-TTAF; Gannon et al., 2012), these individuals are likely to engage in grievance firesetting and may exhibit entitlement and lack problem solving, social or communication skills.

- *Fire is soothing*: Stored knowledge about when and how fire can restore positive affect or remove negative affective states, including boredom, loneliness, frustration, anger or hopelessness. The script is used as a means of coping with problematic or overwhelming situations with the hope of expediting change. Individuals with these scripts are likely to engage in firesetting underpinned by emotional expression or fire interest (M-TTAF; Gannon et al., 2012).
- *Fire as a cry for help*: Stored knowledge about fire is used to satisfy an unmet need. Namely, resolution derives from attention received by setting or having set a fire. Thus, deliberate firesetting is perpetuated by the learning that setting fires gets one's needs met.
- *Fire is the best way to destroy everything*: Stored knowledge about the use of fire for crime concealment, whereby fire becomes the most effective and preferred method of coping with a problematic situation, is enacted to evade detection. This script was likely informed by early-onset fire misuse and underpinned by general antisocial conduct.

Butler and Gannon (2015) explicate that not all individuals who have set fires hold fire-scripts, rather they propose an interplay between fire-scripts and fire expertise. Namely, more experienced, or proficient firesetters will operate with a degree of automaticity and may hold multiple fire-scripts because

of regular deliberate firesetting, maintained through rehearsal and refinement. Novice firesetters, in comparison, would lack experience and, therefore, have less developed internal representation for the use of fire and be unlikely to hold firesetting scripts. In the context of novice firesetters, Butler and Gannon suggest that history of deliberate fire play would be unremarkable and that the behaviour may have arisen through the influence of a co-offender and/or crime concealment under pressure. Whilst research pertaining to offence-specific scripts for deliberate firesetting has been conducted among adult populations, to date there has been no empirical work on fire-specific cognition amongst juveniles.

Methodological considerations

The qualitative research studies by Swaffer and Hollin (1995) and Walsh and Lambie et al. (2013) both employed the qualitative method of grounded theory (Glaser & Strauss, 1965). According to Howard-Payne (2015), grounded theory has utility for exploratory research when little is known about a subject area, theoretical understanding lacks an explanation for a phenomenon, or the perceptions and experiences of the individual are of importance to understanding phenomena. The primary purpose of grounded theory is to inductively explore and discover new theory (Howard-Payne, 2015). Braun and Clarke (2006) purport that most researchers, in fact, adopt a grounded theory *lite* approach, which focuses on the description of behavioural patterns without the aim of theoretical development. Braun and Clarke (2016) suggest that in the absence of theoretical development, the process of describing behavioural patterns is akin to the qualitative method of thematic analysis. Swaffer and Hollin (1995) and Walsh and Lambie (2013) provide evidence for the critique put forward by Braun and Clarke (2006), as both qualitative research studies, while adding valuable information to the field of juvenile firesetting, did not have the research aim of developing theory.

The qualitative method of thematic analysis is an appropriate method for exploring the lived experience, perception and understanding and individual–environmental interactions through the lens of a participant (Braun & Clarke, 2016). The process of thematic analysis is explained by Braun and Clarke (2016) to be divided into two distinct categories: *small q* and *big Q*. True qualitative research does not seek to quantify, in any way, the data conceptualised from an individual's narrative (i.e. *big Q*). *Small q* adopts a more realist approach and seeks to quantify the qualitative findings in a way that can be reliably understood by other researchers operating from a quantitative standpoint. Braun and Clarke suggest that a *small q* approach can be identified by researchers who develop frameworks or code books from their data analysis and employ empirical procedures, such as inter-rater analysis.

According to Braun and Clarke (2013), the epistemological stance of a researcher can lie on a continuum from realism (i.e. reality lies within the individual's lived experiences and can be accessed by a researcher), to critical realism (i.e. the reality of a participant may be accessible, yet certainty of reality is not determinable), and finally relativism (i.e. an individual's reality is dependent on *how* it was acquired, such as through socioeconomic construction). From a realist/essentialist stance, the key research concept underpinning the research question is more meaningful when viewed through the lens of the individual, with truth understood to arise from the perspective and reality of an individual's lived experience. Specifically, an inductive and bottom-up approach to developing themes provides a rich conceptualisation of a participant's response, providing meaning behind the behaviour. This approach allows for an epistemologically flexible approach, which is data led rather than trying to fit within a pre-existing theoretical framework (Braun & Clarke, 2006, 2013). At present, no one theory of firesetting behaviour can fully explain the onset, persistence and

desistance of juvenile firesetting behaviour. Thus, exploring the offence chains of juvenile firesetters with a specific focus on proximal factors preceding and following the behaviour is best informed from an inductive perspective. Researchers analysing the responses of deliberate firesetters are arguably using a combination of deductive and inductive approaches because there are existing firesetting theories and empirical research on adult firesetters that provide a lens through which data could be analysed and interpreted (Braun & Clarke, 2021).

As previously alluded, the utility of sequential functional analysis for understanding offending behaviour is well documented and has been previously applied to juvenile deliberate firesetting (Swaffer & Hollin, 1995). Braun and Clarke (2006), however, argue that coding an individual's narrative within a functionally analytic framework is a theoretical thematic analysis, rather than a true inductive approach; the analysis is conducted on a specific aspect of a participant's account (i.e. the specific act of offending) to answer a specific question (i.e. what is the underlying function of the behaviour?). The functional analytic approach, however, acknowledges holistic integration of distal, proximal and consequential thoughts, feelings and experiences from the perspective of the individual to explore a particular phenomenon (i.e. behavioural function). Thus, thematic data can still be inductively developed from the experiences and accounts of the young people interviewed, rather than searching for extracts that are consistent with pre-existing theory or seeking hidden ideologies beyond the data. Transcribing within a functional analytic framework permits investigation into all facets of an individual's life, to inform a contextual understanding of a behavioural function. Accordingly, coding personal narratives in a functional analytic way is inductive at a semantic level. Moreover, this coding process can be replicated and enables comparisons across samples (i.e. firesetting and non-firesetting offenders), behaviours (i.e.

index offence and additional problematic behaviours), time-points/stages of development and environments.

Purpose of current research

The current paper aims to contribute towards the advancement of theory, assessment protocols and treatment pathways for juvenile deliberate firesetters by conducting an empirical investigation into the proximal fire-specific risk factors amongst a sample of juveniles adjudicated for an offence of arson.

In-depth analysis of dynamic risk factors occurring in proximity to deliberate firesetting will provide further understanding of why a juvenile gravitates towards deliberate firesetting, heterogeneity of juvenile deliberate firesetting, intra-individual versatility of firesetting behaviour and plausible insights into the continuation of or desistance from deliberate firesetting. Offence-specific scripts offer explanation for heterogeneity within firesetting behaviour, as well as differentiating firesetters from non-firesetters. Fire interest and historical involvement with fire are found to be the strongest predictors of juvenile firesetting behaviour (Perks et al., 2019); however, how fire interest and historical involvement with fire manifest amongst the juvenile deliberate firesetting population is yet to be determined.

It is anticipated that juveniles adjudicated for arson would hold fire-specific scripts akin to those found amongst adult firesetters, although, owing to the relative developmental immaturity of a juvenile population, juvenile specific fire-scripts may emerge from the data. Moreover, on account of the criminal versatility amongst juvenile offenders and adolescence being a transitional phase of growth and development, multiple fire-scripts were expected.

Method

Participants

In the current study, the sample comprised $N = 35$ adjudicated juvenile arson offenders. Participants were recruited through Australian

Justice Departments across two independent jurisdictions throughout 2015 and 2016. The upper limit of the Youth Justice system is 17 years old in all Australian jurisdictions. The sample, therefore, consisted of young persons aged between 11 and 17 years at the time of their offence, and who were still under the supervision of an Australian Justice Department at the time of recruitment. Participant demographics are in Table 1.

The key inclusion criterion for this sample was that the young person either had been referred to Youth Justice Conferencing (YJC), also known as restorative justice, for deliberately lighting a fire or had been convicted of arson and was serving a supervision order in the community or detention. Of the 35 adjudicated firesetters recruited, more than half self-reported multiple incidents of deliberate firesetting, including incidents which had not necessarily come to the attention of professional services ($n = 18$; 51.43%).

Materials

Participants were requested to complete a semi-structured functional analytic interview. Sequential functional analysis (Gresswell & Hollin, 1992) of a young person's index offence was subsequently conducted. This measurement approach aligns with Fineman's (1995) work on offence sequences and fire-specific reinforcers in deliberate firesetting and, in part, Tyler and Gannon's (2017) and Tyler et al.'s (2014) use of the micro-theory approach of offence chains to understand the behavioural function and associated dynamic risk factors relevant to the continuation of a behavioural problem (Ward et al., 2006).

Functional Analytic Interview for Index Offence (FAI-IO; Perks, 2018)

The content of the functional analysis interview schedule was derived from a preliminary review of the literature, and by drawing upon and modifying two existing functional analysis

Table 1. Participant demographics for adjudicated juvenile arson offenders.

Demographic	Arson	
	M (SD)	n (%)
Age (years)		
M age at first CJS order	13.98 (1.41)	
M age at index offence	14.86 (1.33)	
M age at research interview	16.67 (1.60)	
Gender		
Males		32 (91.40)
Females		3 (8.60)
Ethnicity		
Australian		32 (91.40)
Other		2 (5.70)
Unknown		1 (2.86)
Indigenous status		
Aboriginal and/or Torres Strait Islander		21 (60.00)
Non-indigenous		13 (37.10)
Unknown status		1 (2.86)
History of violence		27 (77.14)

Note: n = 35. CJS = Criminal Justice System. Index offence for the purposes of research was not the date a participant entered the justice system (i.e. date of first contact), but age at the time of offence used for the current research project (i.e. arson).

schedules: (a) *The Multi-Model BARE-PCS (Behaviour, attitudes, relationships, emotions, physical state, cognitions, and sexual arousal) model* (Perkins, 1991), ordinarily used with sex offenders (see Perkins et al., 1998), and (b) *The Structured Aggressive Behavioural Analysis Schedule* (SABAS; Daffern et al., 2009), developed to examine offence paralleling behaviour (OPB) among adult violent offenders.

The FAI-IO consists of 58 open-ended and closed questions, with additional probing questions depending on a participant’s response. The primary focus of the interview was proximal risk factors, specifically acute dynamic cognitive and behaviour processes. Of the 58 questions, 16 investigated distal risk factors in the domains of background factors, self-perception, key relationships and physical condition/disinhibitions. Proximal antecedents were investigated within 25 questions spanning the domains of cognition/affect, environmental triggers, offence characteristics/contextual

factors and physical condition/disinhibition risk factors. Mental health was explored more broadly via five questions, and 12 questions explored protective factors.

Procedure

Participant recruitment and consent

Participants who met the inclusion criterion were identified by the relevant agencies under the instruction of the principal researcher. Prospective participants and their primary caregiver or legal guardian were required to give informed consent, indicating their agreement to participate in the study. Once written consent was obtained, the names and contact details of participants were made known to the researcher.

Location and agreements

Interviews were conducted at the young person’s community justice office or detention centre. To promote engagement in the

research, an incentive of a \$15 non-exchangeable gift voucher for an Australian commercial store was offered to each juvenile participant upon completion of the interview protocol. This was approved by a university Human Research Ethics Committee.

Interview protocol

The participation time for the current study was approximately 60 min. Several provisions, in line with protocol used for child witness testimony known as *Ground Rules*, were put in place to gauge a young person's capacity to articulate thoughts, feelings and behaviour in a reflective manner and to facilitate a narrative explanation, prior to commencing the interview (Brubacher et al., 2015; Faller, 2014; Lamb et al., 2011; Marchant, 2013; Roberts et al., 2011).

Data analysis

Pertinent information about deliberate firesetting behavioural sequence was extracted from the functional analytic interview, and the content of participants' proximal psychological and behavioural process was examined. Participants' narratives included information pertaining to acquired and utilised knowledge of fire ignition, information on the target/victim, general and fire-related cognition/affect/appraisal, level of physiological activation surrounding the offence and behaviour after lighting the fire (e.g. observe, attempt to extinguish or leave), as well as environmental triggers and possible disinhibiting factors (e.g. proximal life stressors, mental health, self-esteem, physical condition or substances). The primary analytic method of the current study was the *small q* qualitative method of inductive thematic analysis, specifically a realist/essentialist method with a semantic approach to coding. This provided a rich conceptualisation of the underlying meaning behind deliberate firesetting behaviour, which was data led rather than trying to fit within a pre-existing theoretical framework (Braun & Clarke, 2006, 2012). The six systematic steps outlined by

Braun and Clarke (2006, 2016) were followed: data familiarisation, initial coding, searching for themes, reviewing themes, defining and naming themes, and write-up. While qualitative researchers will often combine their results and discussion into one section only, the current chapters retained the standard distinction between the results and discussion due to the mixed-method approach and multiple research questions.

Inter-rater reliability

Some researchers have advised against the use of inter-rater reliability in qualitative research (Braun & Clarke, 2013), as it represents the realist assumption that there is a specific truth to be found. Morse (2015), however, recommended that the use of reliability and validity checks within qualitative research ensures rigour and an evidence base in line with the scientific practitioner model. Accordingly, an independent rater was employed to check for level of agreement across researchers throughout the coding process, a method employed elsewhere (e.g. Haqanee et al., 2015). The researchers acknowledge that the decision to quantify their data means their approach to thematic analysis is underpinned by an essentialist/realist epistemology and (post)positivist ontology/research values.

Inter-rater reliability of coding and categorisation of participants' narratives into themes was performed, with an initial agreement of near perfect, $k = .91$. The independent raters in this study were two graduate-trained psychologists. Where discrepancies arose the independent raters reached consensus through discussion with a third rater, an Assistant Professor of Psychology, which resulted in 100% agreement.

Results

Thematic analysis – implicit fire theories and scripts

To determine the presence of potential fire-scripts, firstly themes of firesetting behavioural

patterns were inductively developed from participants' accounts of why, how and when they use fire.

Six fire-specific themes were determined, two of which were broken down further into two separate sub-categories: (a) fire interest (fire is cool or fire is fascinating); (b) fire is controllable; (c) fire denial/accidental; (d) fire is destructive (for fun or for revenge); (e) fire creates calm; (f) fire conceals evidence. These themes were initially considered by the research team to be akin to an implicit theory (i.e. a belief system informed by previous experiences and likely to inform future responding). However, when reviewed more closely, four of these themes were found to be consistent with a cognitive script (i.e. a behavioural guide for how and when to use fire; a clear cognition providing direction for the use of fire): (a) fire creates destructive fun; (b) fire conceals evidence; (c) fire creates calm; and (d) fire is a destructive tool for revenge. The frequency of these fire-scripts adds up to more than 100% due to overlapping scripts; juvenile participants were found to hold multiple scripts about the use of fire.

Fire interest (implicit belief)

Juveniles hold the implicit belief that fire is intriguing. This occurs on a continuum from low-level developmental fire interest to intensified interest or fascination with fire/firesetting. When fire was appraised by a young person as superior to alternative behaviours or the young person was preoccupied with the use of fire, then it was categorised as fascination.

Fire is pretty cool

The firesetting is deliberate, and fire is chosen because it is interesting, and the young person is intrigued by what could happen. Juveniles will push boundaries with their use of fire to see new, fun and cool things, like an explosion (e.g. sound, sight, impact). The effects that the property of fire creates was the primary impetus for engaging in the behaviour, as

opposed to the destruction it can cause (i.e. fire creates destructive fun). Just over half of juvenile firesetters (54.29%; $n = 19$) held this belief.

... because I liked fire, I was a fire bug, but I wasn't allowed, I didn't light fires in my yard, because I didn't want to kill the green grass, because it would make mum unhappy (what is it about fire that you like so much?) just cause it's red, it burns it, anything that touches it will make it vanish (anything else about it that you like?) nah that's it (how does it make you feel when you are watching it?) it's thoughtful a bit, maybe I shouldn't have done it, maybe I should have, maybe because it was fun. ... I just don't like it no more (why don't you like it anymore?) because it's bad, mum told me if you're a firebug the devil will come after you and the black fella spirits (and did that scare you?) yeah, I shouldn't have done that, when mum found out, we got in big trouble, and she told me that then she grounded me and stuff, and I just didn't do it anymore, she told me about the spirits.

Fire is fascinating

The firesetting is deliberate, and fire is chosen because it creates a significant degree of excitement and fun for an individual, beyond that of novel interest. It is more of a pathological interest and goes beyond watching a fire or lighting one because it was fun. Juveniles categorised as fascinated with fire displayed indicators of fire mastery and fire being enmeshed with their self-concept. Only four young persons in the current sample (11.43%; $n = 4$) were classified as fascinated by fire.

... it's just like I've seen it done and well, it's pretty much like drinking or smoking or something, you get a thrill out of it ... it's just an enjoyment you get out of it, to watch something burn. [I just] Sit and watch ... it's just like it's just how, people have their own things that they enjoy, like if someone is watching I dunno what people like to enjoy, but like if you watch something you enjoy and you just feel good about it, it's pretty much like that, it's exactly the same.

Three of the four participants with the belief that *fire is fascinating* had held this belief for a protracted period prior to their index offending. These participants provided detailed narratives demonstrating versatile knowledge of ignitions, methods for causing destruction and means of evoking fear in others using fire (e.g. carrying a water bottle containing fuel and squirting it in someone's face while flicking a lighter for intimidation). All three of these participants held the belief that fire was controllable and articulated fire to be part of their self-concept (e.g. 'I'm a back burner' or 'I can light a fire out of anything'). Participant's exuded either a sense of pride pertaining to their fire skill or a tone of passion when providing their narrative.

Three of the four participants with the implicit belief that fire is fascinating did not articulate any negative impacts from their previous deliberate fire use, nor were they able to confidently confirm they would not light another fire again in the future. Two of these three firesetting participants were also classified as serious violent offenders at the time of the index interview and were found to hold an aggression fire-script (fire is a destructive tool for revenge) and a coping fire-script (fire creates calm) at the time of their index offence.

Fire is controllable (implicit belief)

Juveniles were found to hold the implicit belief that fire will destroy everything, and that fire can be controlled by the person who started it. Nearly half of all deliberate firesetters held this belief (48.57%; $n = 17$). *Fire is controllable* was found to occur in one of two contexts: (a) naivety/over confidence, and, (b) absence of empathy. In the context of naivety, the firesetting is deliberate but not necessarily intended to cause the resultant damage, rather the young person was found to engage in the behaviour because of the misconception that they are in control. Typically, when the fire got out of control it shocked the young person

and created panic, resulting in abandonment of the fire without attempting to extinguish it. For some, however, the realisation that fire is *not* controllable was positively reinforcing. These firesetters were considered to lack empathy for the target of their firesetting. For example, some participants who held limited fire knowledge and/or experience prior to their index offence, rather than being deterred from firesetting, after experiencing the associated risks began using fire for maladaptive reasons:

... there was this big thing of leaves, a tree must have fallen down, and I lit it up, and then we all started watching it, and then it got out of control, so we tried to get out of there, there was four of us on one motorbike trying to get out, we just took off... and saw it on the news and it was really close to houses and shit [including mine], and thought fuck I didn't mean for it to do that.

There was this girl; she cheated on me so I lit her bin on fire and then I made a bomb and blew her letterbox up. Fire scares everyone; it scares me. If there was a fire around the corner and I was locked in my cell, I would be scared. It can do some damage... It does a lot of damage, more damage than anything else (and did you want to cause damage?) yeah.

Fire denial/accidental (implicit belief)

This theme represents juveniles convicted of arson who either denied their involvement (e.g. attributed blame to a co-offender in the context of broader offending) or admitted to being responsible for the fire, but maintained the fire was an accident and denied any fire history/interest. Denial/accidental response to firesetting was held by 22.86% ($n = 8$) of juvenile firesetters. The finding of scripted denial and minimisation is unsurprising given the high co-occurrence between arson and general offending, and a general failure of juveniles to take responsibility for their own actions:

We were just bored, and we went down this back-alley way, and someone's big shed was open, my friend decided to go in there, so I waited out to see if anyone was coming, and he went in there, and he took a jerry can with fuel and we were walking just around ... just lighting spot fires on the road ... my friend decided to tip the jerry can out on to someone's lawn and flick his smoke on to it, so that is pretty much how it started.

Most of my anger I just took it out on crime or hurting others [I was feeling] Bored, just planning it [the B&E] ... feeling excited [thinking] I hope no ones in here, [I'm] looking for the stuff, where's the stuff, what if someone comes, just need to get the stuff and get out. [But] There's nothing to take, [my] mate lit the fire because there was nothing for us. My mate didn't tell us he had lit it up until we saw the smoke. I thought I had burnt it because I had stepped on a hair dryer and left it. Then he told us he just set a bed sheet alight with a lighter because there was nothing in there [I felt] annoyed!

Fire is destructive (script)

Juvenile firesetters held the implicit belief that fire will destroy everything and that there is nothing quite as destructive as fire. There are two sub-categories within this theme:

Fire creates destructive fun (script)

This theme was considered by the authors to be consistent with a cognitive script and may be representative of the juvenile deliberate firesetting population (i.e. psychosocial immaturity). The firesetting is deliberate and chosen because of its destructive nature, which is perceived by juveniles to be fun. Just over a third of juvenile firesetters held this fire-script (37.14%; $n = 13$). For example:

I [was] feeling happy, it's pretty fun. I don't remember, just made a phone call, so more mates came down ... the older boys, the older mates ... they all ran through the block of flats, smashing into

the apartments... . We turned on the gas in the building. Then [someone] lit a fire in a different room, so the gas could build up and then yeah KABOOM! I dunno it just destroys everything its hectic ... it's just fun to watch, it's fun to run from it, because it moves so quick (so you almost get an adrenaline rush from it?) yeah yeah, like it almost burnt us one time.

I like being destructive. It's fun; it feels hectic ... just watching things go up in flames.

Fire is a destructive tool for revenge (script)

An individual holding this script sets fires deliberately and chooses fire because of its destructive nature. The script is drawn upon in the context of wanting to intimidate or cause harm to someone, and it is driven by malice or revenge. This script can occur in the context of anger (e.g. personal adversity or loss of control), sadness/hurt (e.g. perceived, or real injustice/maltreatment) or fear (e.g. perceived, or real threat to self/others). This fire-script was held by 14.29% ($n = 5$) of the current sample. The level of intended damage articulated by the young person (i.e. intention for the fire to get out of control) was regarded as an indicator of behavioural severity. For example:

I knew he wasn't going to pay up, so I was going there to bash him and set the house on fire [I was thinking] fuck you! [I was feeling] Annoyed [on the way to his house], angry [at the house], out of control [when he locked me out], and annoyed [I could not light the fire properly]... . (While lighting the fire, what were you thinking?) I'm going to kill him! [I felt] Happy [when I finally set it alight], I dunno, I was proud and interested... . Because it's out of control ... exciting! [I] Stood back and started laughing. (What is it that you like about setting fires?) I dunno, because it's like destruction you know what I mean, and when it gets out of control and like big you know what I mean, it gets more scary and that.

Fire creates calm (script)

This theme refers to the implicit belief that lighting a fire can alleviate a negative (dysphoric) emotional state. In the current sample, 20% ($n = 7$) of juvenile firesetters reported using fire to cope with negative or overwhelming feelings. The fire is a dialectic of tranquillity and destruction; it can be captivating and relaxing, but also powerful and destructive. For some participants destruction by fire was their primary and preferred tool of coping, whereas for other participants the use of fire was regarded as a less severe option for coping (i.e. indirect, or displaced means, as opposed to direct self-harm or interpersonal violence). For example:

I was walking around the house with a smile, so I don't know; probably I was confused, somewhere between happy, angry and sad. [Before the fire] Everything just came flooding back, my whole life, I can't explain it ... it was bad [I was], sad, scared, depressed, confused, nervous. [I was thinking] just let it burn. I was just happy; I don't know, it [the fire] was just nice, it was something to take my mind off it. I sat and watched the fire, I closed my door and went to the toilet, then came back and sat there and watched the fire [for 2–3 minutes] and then the fire alarm started going off, so I took it out of the roof and threw it ... there was thick black smoke.

... Well that night, I found out that my girlfriend had cheated on me with three of my best mates, I had a lot of anger in me ... and depressed and fire was the only way I knew how to get it all out. [During] I was actually feeling pretty good, because when the fire was burning it felt like all of the bullshit which was happening before was going up in flames. [I felt] happy and out of control ... Well, I actually felt good, because I got all of that out, instead of taking it out on someone, so it's instead of physically laying into someone because if I start laying into to someone, I won't stop.

Fire conceals evidence (script)

Juveniles who use fire for concealment hold the belief that the fire will destroy all evidence

and protect them from getting in trouble or being convicted of an offence. This theme was considered by the authors to be consistent with a cognitive script pertaining to detection evasion and was held by 40% ($n = 14$) of young people in the current study. In the context of setting cars alight, fire was used due to its accessibility (i.e. match in the fuel tank) and the speed with which it destroys the evidence, as opposed to wiping the car down to remove fingerprints. For example:

I dunno it's just what you do, if you get a hotty [stolen vehicle], you've got to burn it [audio failure] no fingerprints (so it's to get rid of the evidence?) Yeah, pretty much, we smashed the doors off it and reversed it into a tree (why did you do that before burning it?) [Participant laughs] just for fun I guess!

We got bored ... mate suggested we should burn it to get rid of the fingerprints ... we ditched it and burnt it, and it exploded ... I was thinking, well, I haven't got my fingerprints done, but he told me if you do eventually get your fingerprints done then it will eventually come back on you. So, I thought, yeah! The best thing to do is burn it! If it keeps me out of jail I'll do it, but we got caught anyway, so!

Discussion

The present study examined the offence characteristics and narrative accounts of juvenile arson offenders to determine whether they hold fire-specific scripts that may be amenable to change via therapeutic intervention to reduce firesetting risk. Consistent with previous firesetting theory and empirical research on offence cognition (Butler & Gannon, 2015; Fineman, 1995; Gilbert & Daffern, 2017; Dunne et al., 2018; Ó'Ciardha & Gannon, 2012), offence-specific cognitive and behavioural processes were identified among a sample of adjudicated juvenile deliberate firesetters. Deliberate firesetters were found to hold offence-specific scripts formed from individual interpretation, appraisal and

offence-related exposure, resulting in the reinforcement of offence-related contingencies. Multiple functions were found to underpin the onset and maintenance of deliberate firesetting and arson offending among juveniles, resulting in multiple fire-scripts, both between and within individuals.

Fire-specific scripts

Consistent with leading theories of juvenile deliberate firesetting (Fineman, 1995; Jackson et al., 1987) offence-related experiences were found to be associated with psychological vulnerability specific to deliberate firesetting. The narratives of juvenile firesetters contain evidence of fire-specific interest, experience and knowledge (Perks et al., 2019), which manifest within a specific context to meet a functional need. The interactions between a juvenile's individual characteristics and their environmental experiences of fire are considered to shape the onset and maintenance of their deliberate firesetting behaviour (Ó'Ciardha & Gannon, 2012). The formulation of dynamic fire-specific scripts corresponds with previous recommendations for advancing offence-specific protocols (Gannon et al., 2012) and the subsequent advancements among the adult deliberate firesetting population (Butler & Gannon, 2015; Ó'Ciardha & Gannon, 2012).

Qualitative analysis of juveniles' narrative accounts of their firesetting behaviour initially determined three fire-scripts informing when and how they use fire: (a) fire is destructive; (b) fire creates calm; and (c) fire conceals evidence. In addition to the scripts, two key implicit theories about fire were identified among the juvenile sample and were considered to be motivators for their use of fire: fire interest and fire is controllable. The script of fire is destructive was, however, found to be multi-dimensional and was subsequently subdivided to demonstrate the prevalence of its occurrence in the context of seeking fun/stimulation relative to revenge among the juvenile population (i.e. fire creates destructive fun and fire is a destructive too for revenge). Accordingly, the

researchers concluded that four fire-scripts exist amongst the juvenile deliberate firesetting population. Multi-dimensional scripts are also found to occur in the adult firesetting population. Butler and Gannon (2015) proposed that the script of 'fire is a powerful messenger' can manifest either in the context of aggression (i.e. aggression–fire fusion script) or coping with overwhelming situations (i.e. communicating distress). The authors are of the opinion that fire is destructive reflects the psychosocial immaturity of the juvenile population and may be specific to youth engaging in deliberate firesetting or those presenting with neurodevelopmental delays. Not all participants, however, were found to hold fire-scripts; a small proportion of participants admitted responsibility for their offence, but maintained the fire was an accident. These participants lacked experience with fire and naively believed/held the misconception that fire is controllable and, thus, could be regarded as novice firesetters (Butler & Gannon, 2015).

The majority of adjudicated juvenile firesetters were found to have maladaptive beliefs and multiple fire-scripts about fire and displayed a degree of proficiency in their knowledge and use of fire. Amongst cases where multiple fire-scripts were identified, these participants appeared to have developed these scripts across the course of their childhood and adolescence. These participants spoke fluidly about the use of fire and drew upon their knowledge of fire in multiple contexts and for various purposes, seemingly with little effort. Individuals with a particular interest in fire could articulate why they use fire in specific contexts and how they learnt to use fire to effectively to achieve their goals and meet their needs. These findings emphasise the importance of being dynamic with the treatment of fire-specific offenders, particularly when identifying a young person's wider treatment needs and context of behavioural occurrence.

Integration of past and current findings

As shown in Table 2, the current findings illustrate parallels between the proposed juvenile

Table 2. A comparative overview of juvenile fire-scripts, adult fire-scripts and firesetting theory.

Juvenile fire-scripts and implicit fire theories	Adult fire-scripts ^a and adult implicit fire theories ^b	Instant fire reinforcers ^c
Fire creates destructive fun	<i>Implicit fire theories:</i> Fire is controllable Fire is fascinating	Elicit stimulation
Fire is a destructive tool for revenge	<i>Implicit fire theories:</i> Normalisation of violence Powerful tool <i>Aggression–fire fusion script:</i> Fire is a powerful messenger	Remove negative affect
Fire creates calm (internal/external)	<i>Implicit fire theories:</i> Dangerous world Powerful tool <i>Fire coping scripts:</i> Fire is soothing Cry for help	Remove negative affect
Fire conceals evidence	<i>Implicit fire theories:</i> Fire is controllable Fire is fascinating <i>Fire-script:</i> Fire is the best way to destroy evidence	Crime concealment
Fire is controllable	Fire is controllable	
Fire interest	Fire is fascinating	
<ul style="list-style-type: none"> • Fire is pretty cool • Fire is fascinating 		

^aButler and Gannon (2015, 2021). ^bO’Ciardha and Gannon (2012). ^cFineman (1995).

fire-scripts and the conceptual work of Fineman (1995) on instant reinforcers and empirical work on adult fire-scripts (Butler & Gannon, 2015). However, the findings are not synonymous.

The current findings offer partial support for the three instant reinforcers proposed by Fineman (1995) to maintain juvenile deliberate firesetting (i.e. elicit stimulation, crime concealment and remove negative affect). As previously reported, the authors consider the script fire creates destructive fun to be specific to and representative of the juvenile deliberate firesetting population and consider this to align with Fineman’s (1995) suggestion that fire elicits stimulation. Similarly, the script fire conceals evidence is consistent with Fineman’s proposal that fire-specific behaviours can be externally reinforced by crime

concealment. However, the current findings show that categorising a juvenile’s deliberate firesetting under the instant reinforcer of negative affect removal fails to account for critical contextual information and, thus, may be insufficient for informing a young person’s treatment needs.

Butler and Gannon (2015) demonstrated the importance of contextual delineation to better understand the risk management and treatment needs of adult deliberate firesetters. Namely, adult firesetters action fire-scripts in the context of emotional discomfort as a means of coping (i.e. fire is soothing) and in the context of communicating distress for connection or to seek revenge (i.e. fire is a powerful messenger). In the current study, the script of fire is a destructive tool for revenge is consistent with Butler and Gannon’s aggression–fire fusion

script, 'fire is a powerful messenger'. The cognitive script fire is a destructive tool for revenge had a low occurrence in the current sample, though plausibly this is because three quarters of the juvenile sample were also classified as violent offenders and, therefore, may choose more direct means of aggression in the context of revenge. Thus, juveniles engaging in fire within the context of interpersonal grievance may be regarded as more proficient in their use of fire.

The implicit theory of fire is controllable developed in the present study appears equivalent to fire is controllable described by Ó'Ciardha and Gannon (2012). For example, firesetters hold the misconception that they can control fire or underestimate the severity of fire misuse, as well as the detrimental consequences of its misuse (i.e. cognitive distortion). The presence of this belief among a juvenile population is not surprising, given that risk perception and decision-making skills are still developing (Reniers et al., 2016). Moreover, to a degree, the implicit underpinnings of the cognitive script fire creates calm aligns with the implicit theories dangerous world and fire is a powerful tool. Namely, those who may have experienced trauma victimisation may engage in firesetting as they receive a positive sensory or affective experience (Ó'Ciardha & Gannon, 2012).

Using fire to alleviate negative affect can occur independently of fire fascination, with some participants articulating an alleviation of negative affect in the absence of fascination or excitement by fire. For example, one participant described lighting a fire in a dissociative state to alleviate negative affect, but this was his first time lighting a fire for this purpose, having previously self-harmed to achieve the same effects. The individual did not experience excitement or articulate fascination, just that he felt better afterwards. His only prior experience of firesetting was lighting a grass fire with friends in his backyard, at approximately 12 years old, for 'fun'. Therefore, this young person's fire behaviour was not

frequent, pervasive or potent enough to be representative of fire interest or fascination.

Finally, the cognitive script of fire denial/accidental aligns with the literature on denial of responsibilities and best aligns with the understanding that juvenile firesetters are often criminally diverse, are generally antisocial and have poor problem-solving skills. For example, this script was underpinned by a young person's direct attempt to manipulate the environment (i.e. minimise or deny affiliation to avoid a penalty), or the result of affiliation with antisocial associates (i.e. peer pressure and a lack of assertiveness or desire to remove oneself from a problematic situation). Each firesetter participating in the current study was adjudicated for the act of deliberately lighting a fire. Thus, their actions resulted in criminal responsibility. Fire by association or affiliation with peers may be more potent among juveniles than among adults (Uhnnoo, 2016), with psychosocial immaturity and the role of peers in offending contributing towards poor decision making and non-compliance with parents or figures of authority (Monahan et al., 2009).

Limitations of the current study

The chosen method in the current study enabled the development of a rich conceptualisation of the idiosyncratic narratives underpinning juvenile behavioural problems. However, the qualitative data were subsequently quantified to determine which proximal experiences were most prevalent and pertinent among juvenile offenders. Researchers who predominantly operate from a qualitative position would oppose the quantification of qualitative information (Braun & Clarke, 2006). Australian health researcher Pyett (2003) argued that this escapes the point of qualitative research, as frequency does not determine value. Conversely, the assessment of inter-rater reliability in qualitative studies has been adopted by lead researchers in the field of juvenile offending and firesetting behaviour (Walsh & Lambie, 2013) and offers

empirical rigour for the exploration of juvenile offender function. Arguably the subjective nature of qualitative methods and the barrier of accurately *reflecting the other* (Lyons & Coyle, 2016) raises questions about the validity of any qualitative findings, although, as outlined in the Method section of the current study, steps were taken to minimise any threats of research bias, including researcher reflections and inter-rater analysis.

Caution is advised in the generalisation of the current findings given that the small sample size and the findings are exploratory in nature. The response rate from participants' primary caregivers was insufficient for analysis and, thus, not included in the current study. As indicated by Walsh and Lambie et al. (2013), the inconsistency between the reports of child and caregiver indicates that no one source is sufficiently reliable, and the combination of sources is more robust. Nevertheless, the current findings are not redundant, as the qualitative method employed provides a representation of the internal cognitive and emotional triggers from the perspective of the individual's lived experience. These experiences are implicit and cannot be directly observed, thus had caregiver data been obtained its utility would have been limited in informing proximal cognitions of the offender.

There are several barriers to obtaining adequate sample size for this population. For example, the nature of the offence poses a barrier to detection, meaning youth in the juvenile justice system for an offence of arson are under-representative of the number of juveniles engaging in deliberate firesetting (see Watt et al., 2015). Moreover, the context in which the fire occurred often attracts more attention and legal sanctioning than the act of setting the fire (i.e. property damage or motor vehicle theft). A limitation of the current study was that the research team did not prospectively consider information power (Malterud et al., 2016). That said, in accordance with Malterud et al. (2016), the authors believe there is sufficient power for the current

findings to have clinical utility, despite them being only exploratory in nature – namely, because the aim of the study was narrow and with a very small and specific sub-population of youth who had committed criminal offences. Also, no previous studies have empirically investigated fire-scripts amongst a juvenile population. Accordingly, the relatively small ($N=35$) sample that underwent in-depth analysis is plausibly powerful enough for the current research. Moreover, the authors believe there is sufficient theoretical background across juvenile and adult firesetting to offer sufficient power, in addition to the background knowledge and expertise on deliberate firesetting and juvenile offending behaviour amongst the current research team.

The cross-cultural dimension of the current methodology may have negatively impacted upon the cultural integrity and generalisation of the current findings across cultures (Pelzang & Hutchinson, 2017). While understanding variation in linguistic nuances and expression between cultures was taken into consideration at the analysis stage, not all the scripts determined in this study may be relevant cross-culturally. Thus, future studies might consider an evaluation of cultural variation to ensure the development of culturally sensitive protocols for juvenile deliberate firesetting and general offending. This has been done with adult fire-setters (Ellis-Smith, 2020) but to the author's knowledge it has not been a research focus amongst juveniles. In Australia, where there is an over-representation of Aboriginal and Torres Strait Islanders in the criminal justice system, and fire use has practical utility, spiritual connection and positive connotation, such investigation is warranted.

Clinical implications and concluding comments

The current findings have implications for offence-specific assessment and targeted intervention for juvenile deliberate firesetting behaviour. Identification with fire and the identification of offence-specific psychological and behavioural scripts amongst juveniles

provide direction for the treatment of maladaptive fire beliefs and deliberate firesetting behaviour. This study advances the field of juvenile firesetting by proposing specific cognitive scripts within the areas of reinforcement outlined by Fineman (1995). The findings show a degree of consistency with the scripts and implicit theories found amongst adult fire-setters (Butler & Gannon, 2015; Ó'Ciardha & Gannon, 2012). The implicit theories and fire-scripts developed in the current research are contextual to the developmental experiences of a juvenile offender. While the authors recognise the need for these findings to be empirically investigated, they offer a preliminary direction for the assessment and treatment of juvenile firesetters. The fire-scripts emerging in childhood and being revised throughout adolescence highlights the importance of early identification and actively addressing emerging implicit beliefs and scripts in juvenile assessment protocols (e.g. routinely asking about detected and undetected misuse of fire).

Ethical standards

Declaration of conflicts of interest

Danielle Perks has declared no conflicts of interest

Bruce Watt has declared no conflicts of interest

Katarina Fritzon has declared no conflicts of interest

Ethical approval

All procedures performed in studies involving human participants were in accordance with the ethical standards of Bond University Human Research Ethics Committee BUHREC (ID: 15300) and the National Health and Medical Research Council's (NHMRC) statement on Ethical Conduct in Human Research (2007).

Informed consent

Informed consent was obtained from all individual participants included in the study

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